

SECOND EDITION

**Compiled & Edited
By**

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Associate Editor**

**THE MOST COMPREHENSIVE COMPILATION OF
CINEMATOGRAPHIC DATA EVER PUBLISHED!**

AMERICAN CINEMATOGRAPHER MANUAL



**SECOND
EDITION**

HOLLYWOOD

new!

AMERICAN CINEMATOGRAPHER MANUAL

The revised and enlarged Second Edition of the **AMERICAN CINEMATOGRAPHER MANUAL** contains more than 600 (4 X 7 inch) pages of concise, practical, informative shooting data, printed on rugged paper and bound in a tough, flexible material that will stand everyday usage.

New **DIAGRAMS, TABLES, LISTINGS, CHARTS** for shooting color or black and white, in any film size, for theatrical, non-theatrical or television release. New informative text on: **SHOOTING COLOR FILM FOR TELEVISION, KINESCOPE RECORDING, AERIAL IMAGE CINEMATOGRAPHY, EXPOSURE, WIDE SCREEN PROCESSES, BLUE BACKING MATTE PROCESSES, SPLIT-FIELD DIOPTRIC LENSES, PREPARATION OF A & B ROLLS, COLOR CINEMATOGRAPHY WITH FLUORESCENT ILLUMINATION, UNDERWATER CINEMATOGRAPHY, PUSHING FILMS IN PROCESSING FOR HIGHER SPEEDS, SCENE BRIGHTNESS BALANCE**, and much more!

A new **INSTANT INDEX** delivers desired information by merely flipping the pages. A key word—which describes the contents—is printed along the edge of each right-hand page. The entire contents of the Manual is also cross-indexed for ready reference.

Latest technical data on **CAMERAS, FILMS, QUARTZ LIGHTS, MINIATURE CRAB DOLLIES, EXPOSURE METERS, COLOR TEMPERATURE METERS, ZOOM LENSES, CAMERA CONVERSIONS, PORTABLE SOUND EQUIPMENT, FILTERS, UNDERWATER CAMERA HOUSINGS, ETC.**

The American Cinematographer Manual
is income tax deductible as a professional text book.

new!

CAMERAS

Latest technical data on:

65mm PANAVISION	16mm ARRIFLEX BL
65mm TODD-AO	16mm BEAULIEU
35mm ARRIFLEX	16mm BECKMAN & WHITLEY
35mm MITCHELL REFLEX	16mm ECLAIR NPR
16 ARRIFLEX M	16mm MITCHELL REFLEX

and others . . . **CAMERA ACCESSORIES . . . MINI-CRAB DOLLIES**

16mm ECLAIR NPR (BLIMPLESS, SILENCED CAMERA)

MOVEMENT

Film is advanced by new desmodromic cam movement. Quiet film movement is achieved by wedge-shaped claw which slides into perforation with a wedging motion. Film is pulled down and registered upon bench-type registration pin which begins moving into position before film has stopped. Extra long rear pressure plates and side guide rails steady film. Raised area in center of aperture portion of pressure plate eliminates possibility of breathing or focal shift.

SHUTTER

180° high reflectance front-surfaced mirror reflex shutter, centered on motor shaft below aperture, rotates at 45° angle between lens and film plane. Shutter rotation delivers horizontal exposure action and lessens "skipping" problems on fast moving subject matter or fast horizontal camera movement. Exposure time at 24 f.p.s. = 1/48 second.

FOCUSING

Parallax-free through the lens focusing and viewing. No need for external viewfinder. Image magnified 12 times. Critical focusing possible even at low light levels, or with stop-down lens, because of extremely fine grain ground glass and high-gain mirror and low loss optical system.

LENSES

Standard two-position turret has one Camerette CA-1 lens mount and one "C" mount. Turrets available with two CA-1 mounts, or with two "C" mounts. Any lens from 5.7mm focal length may be used without effecting sound level of camera. CA-1 is a heavy precisely constructed instant change bayonet mount without springs or other loose fitting adjustments. Lenses by Angenieux, Kinoptik, Taylor Hobson Cooke and some Berthiot optics can be supplied in CA-1 mount.

MOTOR DRIVE

Standard motor is a 12 volt D.C. transistor-controlled regulated 24 f.p.s. type. Motor generates 60 cycle sync pulse when operating exactly at 24 f.p.s. and maintains speed accuracy within 2/10 of 1% (indicated by running light). Motor has high torque and operates at 1440 r.p.m. to turn shutter shaft directly, so that no noise is caused by gearing down. Also available: variable speed (wild) 12 volts D.C. motor (0-40 f.p.s.); synchronous (sound)

new!

Complete listing of all popular professional films:

EASTMAN
DUPONT
GAË ANSCO
GEVAERT
ILFORD

COLOR and BLACK & WHITE
CAMERA FILMS
TELEVISION FILMS
RELEASE PRINT FILMS
DUPE FILMS

Informative text on Pushing Films in Processing, Preparation of A & B Rolls, Protecting Original Film, and much more!

FILMS

new!

LENSES

Latest technical data and hints on using: Anamorphic Lenses, Zoom Lenses, Close-up Lenses.

16mm & 35mm DEPTH OF
FIELD TABLES

LENS ANGLE TABLES

EXTREME CLOSE-UP TABLES

and much more... including text on using split-field diopter lenses for combined ultra-close-up and distant filming!

LENS FORMULAS

TELEPHOTO LENSES

LATEST LENS LISTS

ZOOM LENSES

KODAK EKTACHROME EF FILM (TUNGSTEN) TYPES 5242 (35mm) & 7242 (16mm)					IDENTIFICATION	
DESCRIPTION					ASA/EXP. INDEX	TUNGSTEN
Universal color reversal film balanced for tungsten light. Replaces ER Film. Color rendition more brilliant and more saturated; vastly improved granularity and sharpness. Can be used indoors without a filter, or outdoors under daylight conditions with an 85 or 85N (85 and neutral density) filter for conversion to proper color balance and exposure. May be rated at 250 with little loss in quality. Will yield amazingly good images at 500 and 1000. Compensation for other indices is made by varying time in first developer. Ideal for color television news coverage and other difficult low-level light subjects. Excellent for available light sports, industrial and night exteriors.					80	See Table Below
					with Kodak Wratten Filter #85	
INCIDENT TUNGSTEN LIGHT TABLE		LENS APERTURE				
24 f.p.s. — Approx. 1/50 Second		No. of Foot Candles Required*		f/1.4	2	40
				2.8	4	5.6
				80	160	320
						640

*For 3200° K tungsten light: 125 index. For other indices see incident light table.

COLOR BALANCE: This film is balanced for tungsten illumination at 3200° K. When other light sources are used, correction filters, such as those indicated in this table, are required.

BALANCED FOR 3200°K. OTHER SOURCES — USE TABLE		
LIGHT SOURCE	LIGHT SOURCE FILTER	CAMERA FILTER
3200°K LAMPS	NONE	NONE
3400°K LAMPS	NONE	KODAK WRATTEN FILTER NO. 81A
M-R Type 170 150 Amp. H.I. Arc	Brigham Y-1 over source	KODAK WRATTEN FILTER NO. 85
M-R Type 40 40 Amp. Duarc	Florentine Glass Filter over source	KODAK WRATTEN FILTER NO. 85

SPECIAL APPLICATIONS: Ektachrome EF Film, Type B, will find wide application in the industrial field for engineering sequential studies, high-speed performance evaluations, scientific studies and general in-plant cinematography. It will also be useful for theatrical and non-theatrical work where the light level is extremely low or when extreme depth of field is called for. For single-system sound recording or for voice-over, this superb film is available with magnetic prestripping.

TRIAL EXPOSURE SETTINGS FOR EXISTING-LIGHT SUBJECTS: Sports Arenas—about 30 to 40 foot-candles of incident illumination—1/50 second at f/2.
Work Areas—Store interiors—about 60 to 80 foot-candles of incident illumination—1/50 second at f/2.8.

COLOR FILMS

Instant Index

General Rules for Zoom Lenses

1. Before mounting lens on camera, be sure that rear element or optical surface is clean. Never loosen any screws or attempt to adjust a zoom lens. Special instruments are required for proper collimation.

2. The lens seating surface must be clean, without grit or foreign matter.

3. Check rear assembly to see if it is loose. If there is a locking collar, be sure it is drawn up tightly. This is especially critical with Angenieux Zoom lenses having built-in reflex viewfinders separate from "C" mount assembly. Be sure "C" assembly is correctly fitted to camera, with no clearance between face of camera and mount.

4. Fit lens to camera carefully and *be sure* that lens or adapter is firmly seated against face of camera. On Arriflex, the lens must be pushed into turret as far as it will go. It must seat flush against face of turret with *no clearance*. Some lenses may fit snugly and may seem to be seated even though there may yet be 2 or 3 mils clearance. This can ruin the performance of the finest lens.

5. When focusing, set the *zoom position* at its *maximum focal length* and the *lens diaphragm* at its *widest opening*. After the lens is focused the zoom lever may be positioned anywhere in the zoom range. If the camera is panned or tilted to another subject at a different distance, follow-focus to maintain sharpness throughout the scene.

6. Most common errors are: zooming too fast and too often! Slow zooms are generally most effective. Fast zooms should be used only when dramatic emphasis should be switched to a particular subject instantly! Slight panning may be required when zooming to telephoto position because of subject drift, due to the zoom lens' inherent lack of optical centering.

7. Never force twist a zoom lens when fitting to or removing from a camera. This can damage the delicate internal components. If a zoom lens appears difficult to remove from the camera or adapter mount, try gripping it in several different places with one hand on the mount and the other on the stationary portion of the lens barrel.

8. It should not be necessary to stress that best zoom shots require that the camera be mounted on a rigid tripod, particularly when zooming to long focal lengths. If the camera must be hand-held for newsreel or documentary shots, a shorter range of focal lengths should be employed to minimize camera shake.

Storage & Transportation

Zoom lenses require extreme care in handling because of their complex construction. They are considerably more fragile than conventional lenses and necessarily quite bulky.

Instant Index

ZOOM LENS

new!

COLOR

Latest Color Filming Techniques for negative and color emulsions.

COLOR TEMPERATURE METERS

LIGHT CORRECTION FILTERS

EASTMAN, HARRISON & SPECTRA FILTERS

Latest data on Color Cinematography with Fluorescent Illumination!

new!

LIGHTING

Latest data on lighting equipment and illumination techniques.

QUARTZ LAMPS

SUN GUNS

MOLE-RICHARDSON

MORGAN

SYLVANIA

COLORTRAN

McALISTER

LAMP LISTINGS

Plus Cable Distribution, Wire Reference Tables, Electrical Formulas and other useful data.

GUIDES FOR INITIAL TESTS WHEN EXPOSING COLOR FILMS WITH FLUORESCENT LIGHTING

EASTMAN COLOR FILMS

Type of Fluorescent Lamp	Films Balanced For Daylight		Films Balanced For 3200°K Tungsten	
	Filters	Exposure Increase	Filters	Exposure Increase
Daylight	40M+30Y	1 stop	85*+30M+10Y	1 stop
White	20C+30M	1 stop	40M+40Y	1 stop
Warm White	40C+40M	1½ stop	30M+20Y	1 stop
Warm White Deluxe	60C+30M	1½ stop	10Y	½ stop
Cool White	30M	¾ stop	50M+60Y	1½ stop
Cool White Deluxe	30C+20M	1 stop	10M+30Y	¾ stop

*KODAK Wratten Filter No. 85 (use proper exposure index)

COLOR  Instant Index

NOTE: Flm should be exposed at 24 f.p.s. or less (exposure times should be longer than 1/60 second to avoid varying brightness and color due to changes during a single a-c cycle). With color reversal films, test exposures should be made using filters that vary at least ±CC 10M and CC 10Y from those suggested in the table.

SYLVANIA SUN GUN MODEL SG-65 & SG-65 EXF

LAMPS	RUNNING TIME: MIN.	COLOR TEMP.	POWER SUPPLY	LAMP LIFE: HRS.	RECHARGE RATE*	WEIGHT
FBT 150 w	50	3400°K at rated voltage	30 Volt Nickel Cadmium Battery	12	SG-65: 6 hrs. SG-65 EXF: 1 hr.	17½ lbs. (Complete Unit) 2½ lbs. (Head only)
FBV 250 w	30			12		
FBW 350 w	22			12		

FEATURES: CLOVERLEAF REFLECTOR has five reflecting surfaces which throw a rectangular pattern of light for even illumination over entire picture area, even in corners. VARIABLE BEAM CONTROL permits adjustment from flood to spot with thumb movement, through five click stops. Flood position covers field of 10mm wide-angle lens. ON-OFF BUTTON operated with simple pressure of heel of hand or thumb, also permits control of focusing lever with same hand. Safety lock prevents accidental use. LAMP REPLACEMENT: lamp simply screws into socket. SPARE LAMPS: two spare lamp holders at back of hood. SG-65 EXF DELUXE MODEL has a selector switch which also allows 230 volt input for overseas use.

*Charging times are based on new batteries; an older battery will require longer charge. Operate battery at 26 volts or higher for maximum efficiency. Fulltest benefit is derived from fully charged battery.

LIGHTING  Instant Index

new!

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TELEVISION

Latest text on Shooting Film in Color for Television, and latest data on:

KINESCOPE TECHNIQUES

TELEVISION FILM PROBLEMS

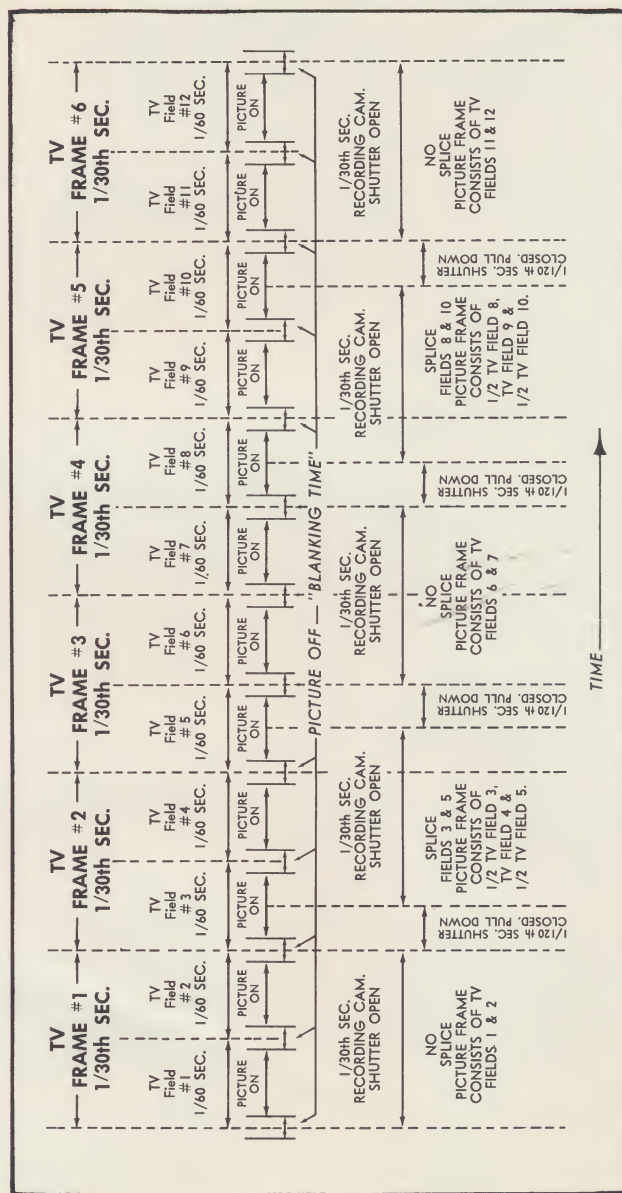
TV SAFE ACTION AREA

& SOLUTIONS

TV LENS ANGLES

TV MAKE-UP

Also Explanatory Charts, Diagrams and Tables for Television Filming.



TELEVISION *Instant Index*

new!

SOUND

Latest text on Choosing and Using Sound Equipment, plus highly informative instructions on Sound Recording.

NAGRA

PERFECTONE

EMI

WESTREX

RANGERTONE

AURICON

Much practical information for the non-theatrical cameraman who shoots sync-sound on location or in the studio.

NAGRA MAGNETIC SOUND RECORDER

NAME & MANUFACTURER

NAGRA NTPH, Stefan Kudelski (Switzerland).

MAGNETIC FILM OR TAPE TYPE AND SPEED

¼ inch Tape at 3¾, 7½ and 15 inches per second (switch selected).

CAPACITY

5 inch reels (lid closed), 7 inch reels (lid open).

SIZE & WEIGHT

12½" x 8¾" x 4¼", 13 pounds 13 ounces.

MONITORING

Director/Reproduce (low impedance) headset monitoring while recording. Two watt loudspeaker system for small group listening of play-back incorporated. Separate battery operated loud speaker/5-watt amplifier available for stage playback (Model D.H.) "Line Output" available during recording or playback at 600 ohms, about +15 dbm.

ELECTRONIC DETAILS

38 transistors, 15 diodes, and 1 zener diode. High frequency bias used on both record and Neo-pilot sync heads. (High frequency erase current used.) Entire system operates at a regulated 10.5 Volts.

MICROPHONE INPUT

Cannon XL 50 or 200 ohms (strap either) low level line input for use with accessory microphone pre-amp (BS) or 3-Mic Mixer (BM) in addition to normal mic input, and high level line input (½ to 10 volts) can be used.

MOTOR DRIVE & POWER SOURCE

12 standard size "D" flash light cells normally used. As average Nagra recorder consumes only .2 amps (in "Record" mode), battery life varies between 10 to 20 hours, dependency on quality of cells used and duty cycle of use. Nickel cadmium batteries may be used, and recharged without moving from recorder, with accessory charging attachment. The motor drive is a closed-loop servo providing an excellent tape drive of uniform motion, and reliability.

SPECIAL FEATURES

An "Automatic Record" position is standard on all Nagras. Its use is intended primarily for interview work, and should rarely be used for normal sync/sound shooting because of its "limiting" action. A "line-up" oscillator for use as a reference level in transferring to film is incorporated. The Nagra has a built in "Bloop" oscillator which can be used with "silent-slate" cameras. The servo motor drive of the recorder permits the use of several types of "self-resolvers" for either transferring in sync to film, or for use as a completely portable system for sync play-back to cameras when used on "Stage play-back" systems.

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SOUND

new!

TECHNIQUES

A.S.C. RECOMMENDATIONS

BLUE BACKING PROCESS

UNDERWATER CINEMATOGRAPHY

AERIAL IMAGE CINEMATOGRAPHY

OPTICAL PRINTING

WIDE SCREEN PROCESSES

TECHNISCOPE

SCENE BRIGHTNESS BALANCE

PROCESS BACKGROUNDS

SEAMLESS TRANSLUCENT BACKGROUNDS

THE "TECHNISCOPE" WIDE SCREEN SYSTEM

A.S.C. RECOMMENDATION #13

1. SCOPE

- 1.1 The following recommendation describes briefly the basic principle of the Techniscope wide screen system with the aid of drawing A.
- 1.2 The dimensions for the camera aperture and its relative location, as to horizontal and vertical center lines, are described by way of a drawing B.
- 1.3 The ground glass and/or finder markings for the 2.35:1 Composition Area, the 1.85:1 Aspect Ratio Area, and the TV-extraction area are presented on three drawings, C.

2. BASIC PRINCIPLES OF THE TECHNISCOPE SYSTEM

- 2.1 The Techniscope camera original negative moves only 2 perforations per image in the camera. The frame rate is, of course, the standard 24 frames per second. Straight forward linear lenses are used during photography, and due to the reduced height, on the average shorter focal length lenses will be employed as compared to the 4 perforation systems. Any lens suited for a 2 perforation Techniscope camera ranging from 18.5mm up to 300mm can be used. In each case the developed camera original negative will look as schematically presented in drawing A (top).

The daily rush print, as well as the final theatrical release print, are optically "stretched" to the full height of the standard Cinemascope or Panavision aperture dimensions and the image, by this method, is identical to picture information having a squeeze ratio of 2:1.

No special editing and projection equipment is necessary. Most presently used well-known professional cameras, both for studio use and hand held operations, can be modified for the 2 perforation pull-down Techniscope system.

3. CAMERA APERTURE DIMENSIONS

- 3.1 The Techniscope camera aperture has the dimensions as per drawing B namely, 0.868" x 0.373", which is a 2.35:1 aspect ratio.
- 3.2 The vertical center line of this aperture is identical with the standard academy aperture, namely 0.738" from the guided edge.
- 3.3 The horizontal center line is identical with the horizontal center line between the 2 perforation holes adjacent to the aperture. (See drawing.)

NOTE: It is most important to respect this positioning

Instant Index

A.S.C. RECOMMENDATIONS

new!

TECHNIQUES

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